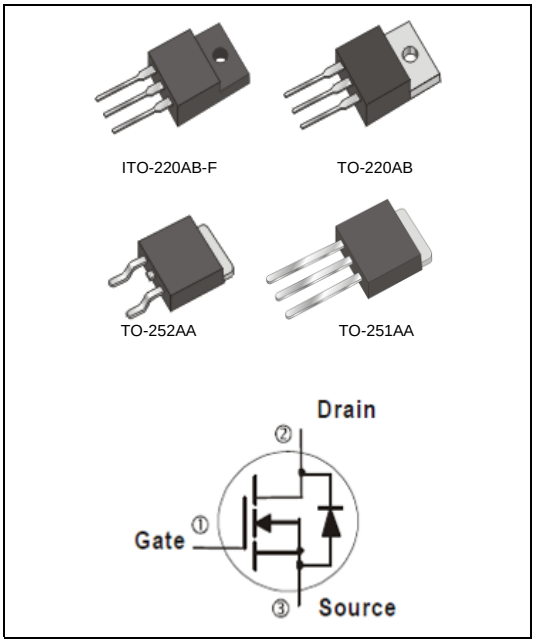
PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

1000V N-Channel MOSFET

Voltage	1000 V	Current	2 A



Features

- $R_{DS(ON)}$, V_{GS}@10V, I_D@1A<9Ω
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : TO-251AA,TO-252AA ,TO-220AB, ITO-220AB-F Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-251AA Approx. Weight : 0.0104 ounces, 0.297grams
- TO-252AA Approx. Weight : 0.0104 ounces, 0.297grams
- TO-220AB Approx. Weight : 0.067 ounces, 1.9 grams
- ITO-220AB-F Approx. Weight : 0.068 ounces, 2 grams

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	TO-251AA	TO-220AB	ITO-220AB-F	TO-252AA	UNITS
Drain-Source Voltage		V_{DS}	1000				V
Gate-Source Voltage		V_{GS}	±30				V
Continuous Drain Current (Note 4)		I_D	2				A
Pulsed Drain Current		I_{DM}	8				A
Single Pulse Avalanche Energy (Note 1)		E_{AS}	148				mJ
Power Dissipation	T_C=25°C	P_D	50	80	39	50	W
	Derate above 25°C		0.4	0.64	0.31	0.4	W/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150				°C
Typical Thermal Resistance (Note 4)							
- Junction to Case		$R_{\theta JC}$	2.5	1.56	3.21	2.5	°C/W
- Junction to Ambient		$R_{\theta JA}$	110	62.5	120	110	°C/W

- Limited only By Maximum Junction Temperature

PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	1000	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2	3.2	4	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=1A	-	7.6	9	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=1000V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V	-	-	±100	nA
Diode Forward Voltage	V_{SD}	I_S=2A, V_{GS}=0V	-	0.8	1.7	V
Dynamic (Note 5)						
Total Gate Charge	Q_g	V_{DS}=800V, I_D=2A, V_{GS}=10V (Note 2,3)	-	14	-	nC
Gate-Source Charge	Q_{gs}		-	2.9	-	
Gate-Drain Charge	Q_{gd}		-	7.9	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1MHZ	-	385	-	pF
Output Capacitance	Coss		-	42	-	
Reverse Transfer Capacitance	Crss		-	8	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=500V, I_D=1A, R_G=25Ω (Note 2,3)	-	10	-	ns
Turn-On Rise Time	t_r		-	23	-	
Turn-Off Delay Time	$td_{(off)}$		-	37	-	
Turn-Off Fall Time	t_f		-	34	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	2	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	8	A
Reverse Recovery Time	trr	V_{GS}=0V, I_S=2A dI_F/ dt=100A/us (Note 2)	-	647	-	ns
Reverse Recovery Charge	Qrr		-	1.77	-	uC

NOTES :

1. L=30mH, I_{AS}=3.1A, V_{DD}=50V, R_G=25ohm, Starting T_J=25°C.
2. Pulse width≤300us, Duty cycle≤2%.
3. Essentially independent of operating temperature typical characteristics.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.

PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

TYPICAL CHARACTERISTIC CURVES

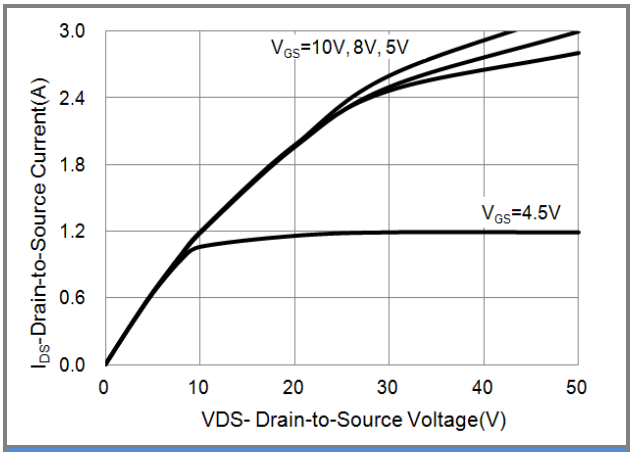


Fig.1 Output Characteristics

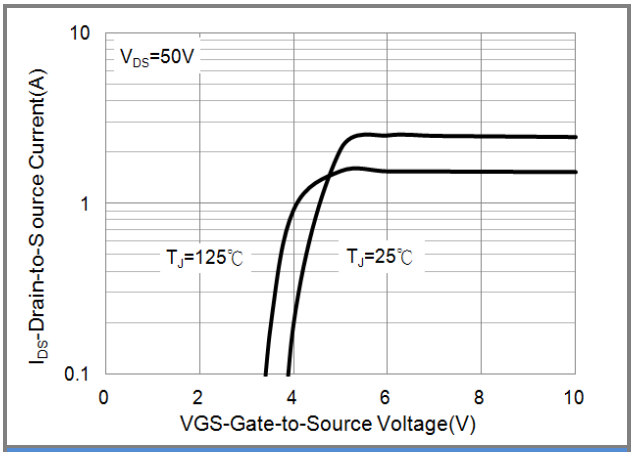


Fig.2 Transfer Characteristics

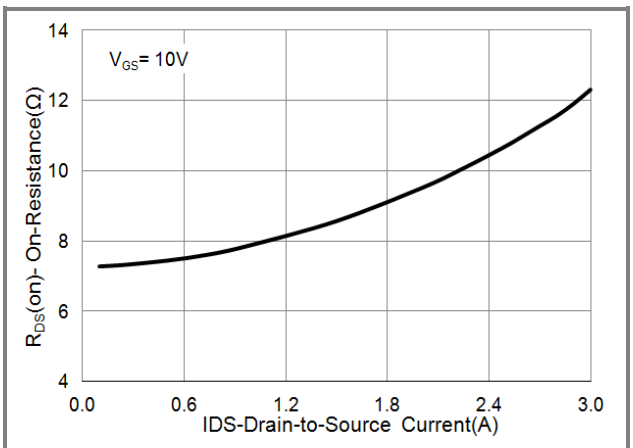


Fig.3 On-Resistance vs. Drain Current

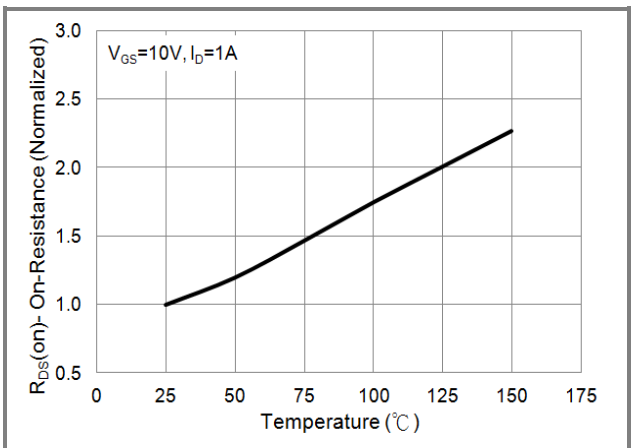


Fig.4 On-Resistance vs. Junction Temperature

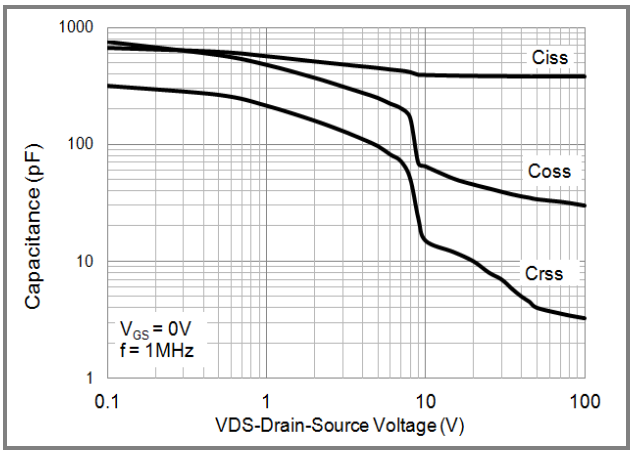


Fig.5 Capacitance vs. Drain-Source Voltage

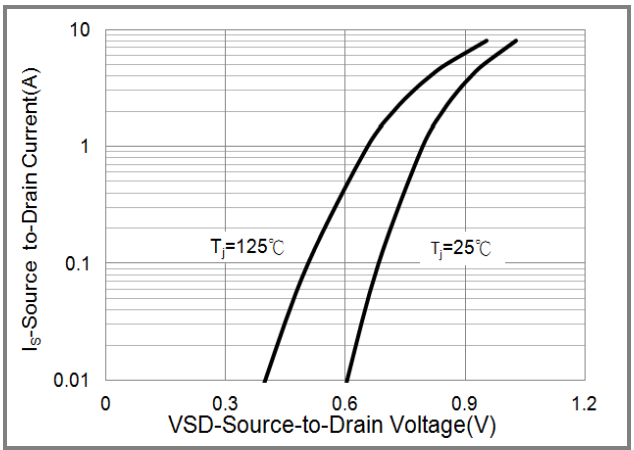


Fig.6 Source-Drain Diode Forward Voltage

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TYPICAL CHARACTERISTIC CURVES

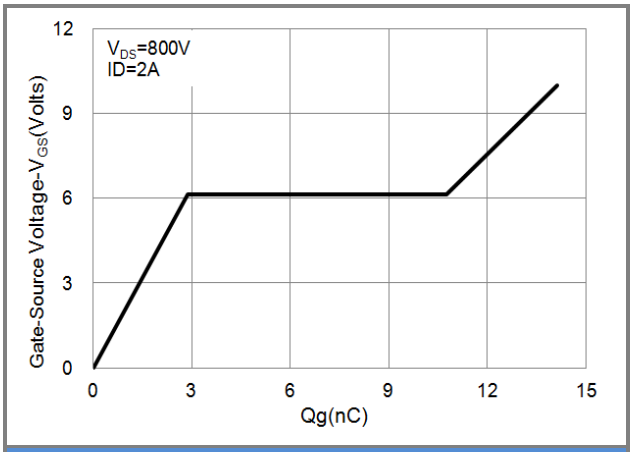


Fig.7 Gate Charge

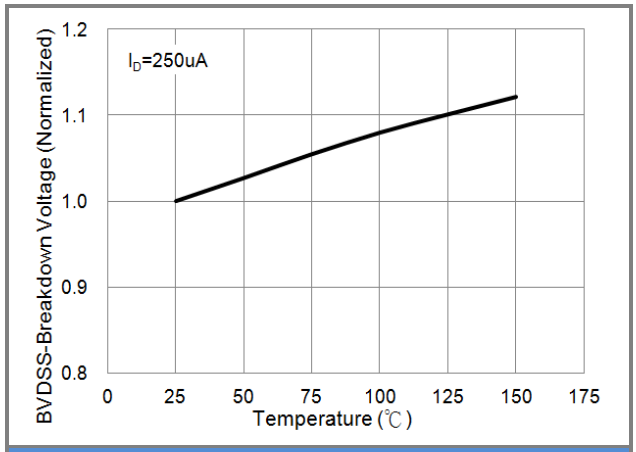


Fig.8 BV_{DSS} vs. Junction Temperature

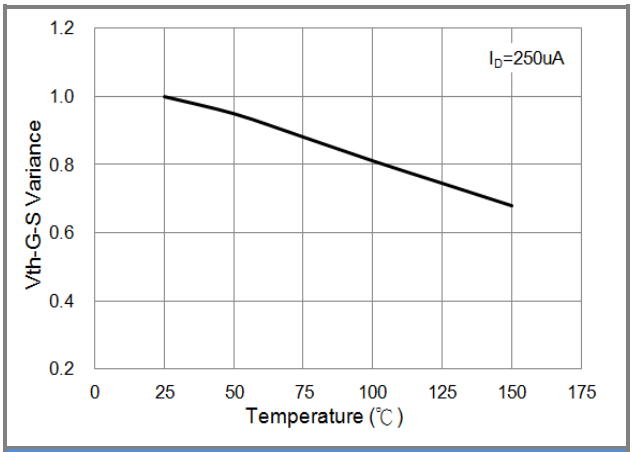


Fig.9 Threshold Voltage Variation with Temperature

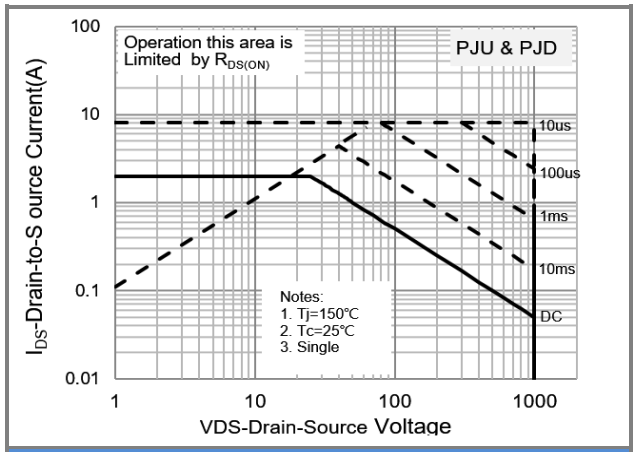


Fig.10 Maximum Safe Operating Area

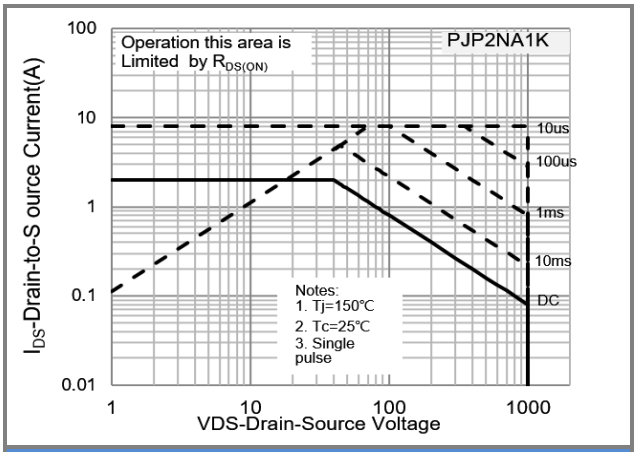


Fig.11 Maximum Safe Operating Area

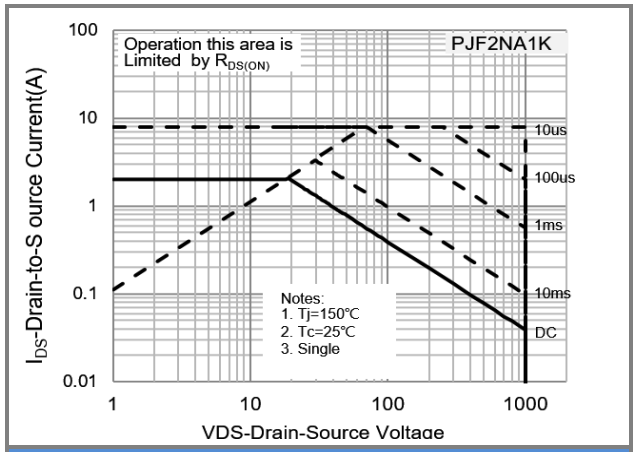


Fig.12 Maximum Safe Operating Area

PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

TYPICAL CHARACTERISTIC CURVES

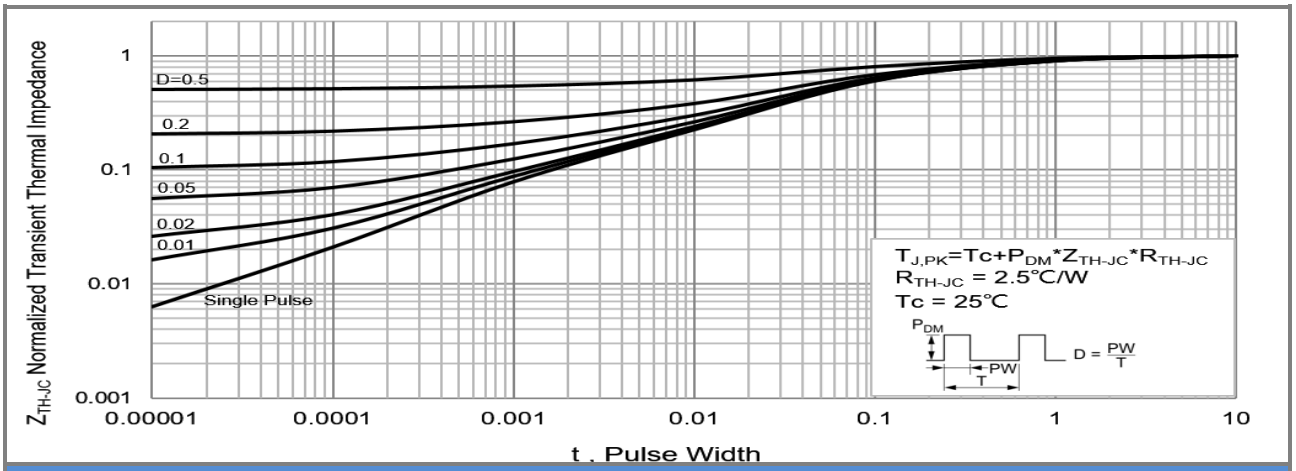


Fig.13 PJU/PJD Normalized Transient Thermal Impedance vs. Pulse Width

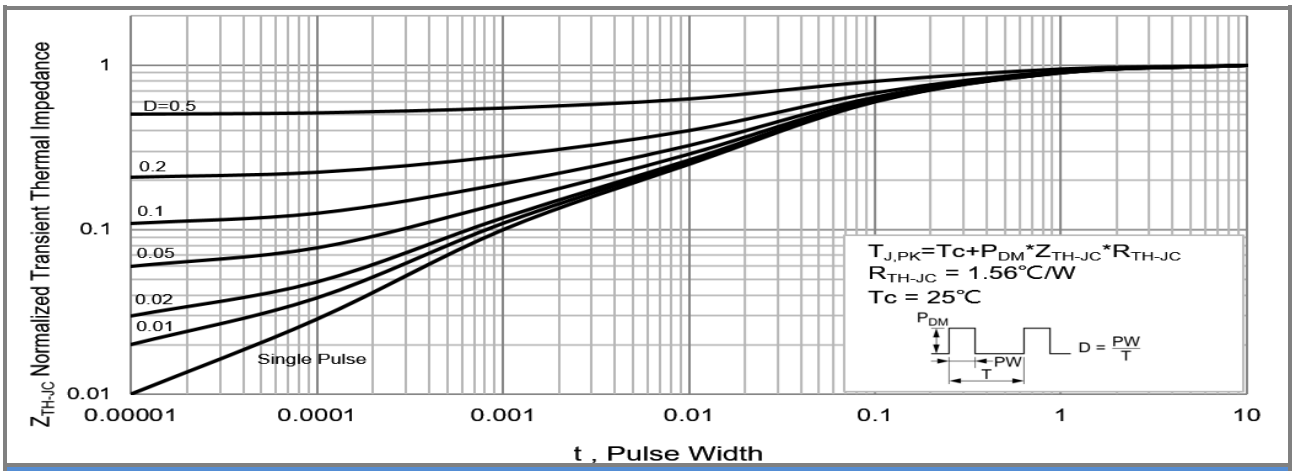


Fig.14 PJP2NA1K Normalized Transient Thermal Impedance vs. Pulse Width

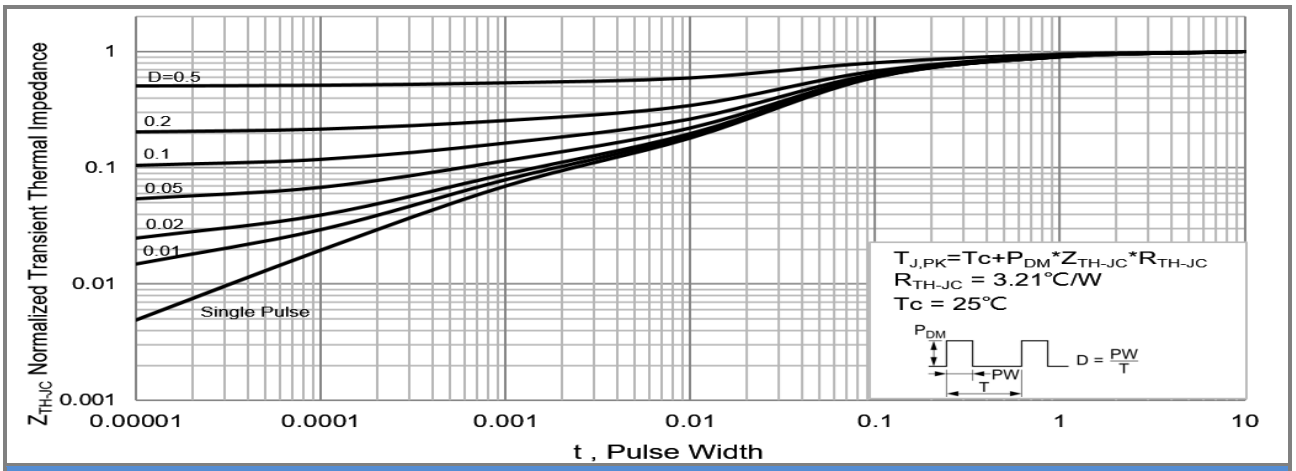


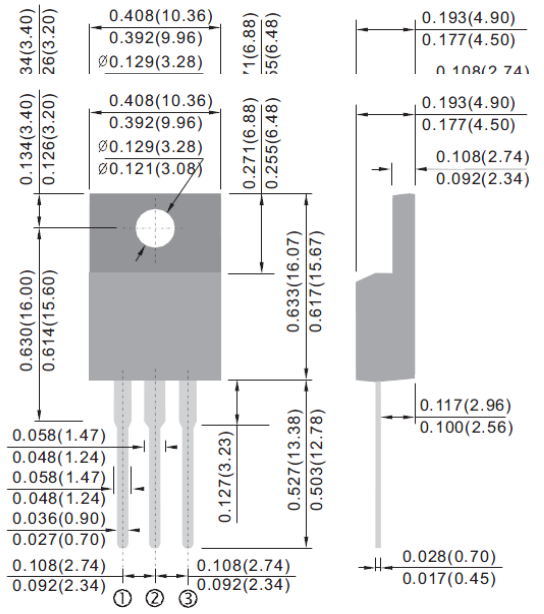
Fig.15 PJF2NA1K Normalized Transient Thermal Impedance vs. Pulse Width

PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

Packaging Information

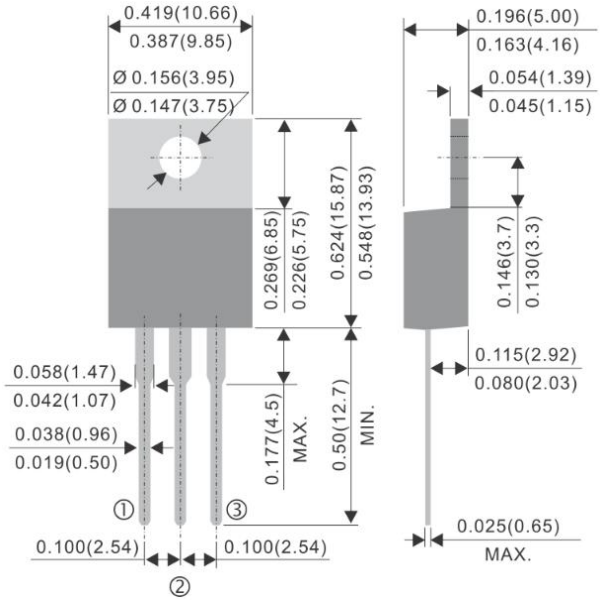
ITO-220AB-F Dimension

Unit: inch(mm)



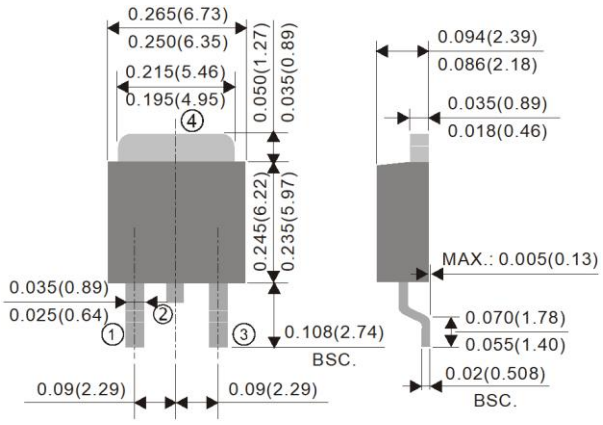
TO-220AB Dimension

Unit: inch(mm)



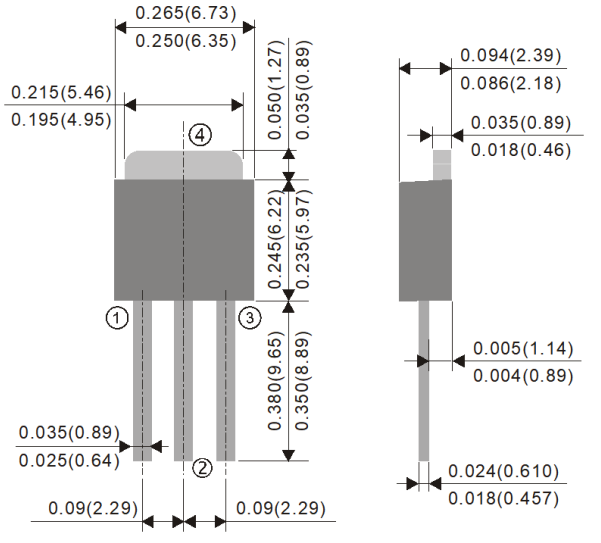
TO-252AA Dimension

Unit: inch(mm)



TO-251AA Dimension

Unit: inch(mm)

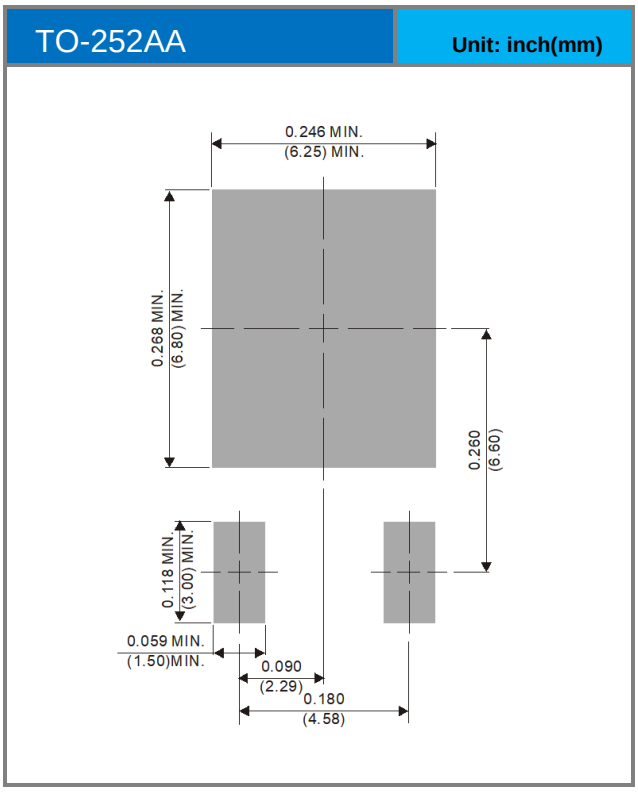


PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJU2NA1K_T0_00001	TO-251AA	80pcs / Tube	U2NA1K	Halogen free
PJD2NA1K _L2_00001	TO-252AA	3,000pcs / 13” reel	D2NA1K	Halogen free
PJP2NA1K _T0_00001	TO-220AB	50pcs / Tube	P2NA1K	Halogen free
PJF2NA1K _T0_00001	ITO-220AB-F	50pcs / Tube	F2NA1K	Halogen free

Mounting Pad Layout



PJU2NA1K / PJD2NA1K / PJP2NA1K / PJF2NA1K

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